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1-2-3 Market Segmentation

Frederick W. Winter

College of Commerce and Business Administration
Bureau of Economic and Business Research
University of Illinois, Urbana-Champaign

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Department of Business Administration

ABSTRACT

Normative segmentation is difficult because of constraints and cost versus revenue considerations. Lotus 1-2-3 offers a convenient and "manager friendly" way to select appropriate marketing mixes to target to various market segments.

The author would like to thank the Procter and Gamble Company for their generous support to the marketing faculty at the University of Illinois. This grant made possible the utilization of equipment with which this program was developed.

Marketers have long recognized that a market is not really made up of potential customers with identical needs and wants . Thus, the concept of market segmentation which involves "the act of dividing up a market into distinct groups of buyers who might require separate products and/or marketing mixes" (Kotler, 1984), is of major importance.

Segmentation, as a form of aggregation, can help reduce the complexity of market heterogenity. Obviously it is far easier to consider five different market segments than 500,000 individual potential customers. But in practice, normative segmentation has remained very much an art.

In a theoretical paper, Tollefson and Lessig (1978) report:

> Market segmentation involves two related problems: (1) the aggregation of potential customers into segments or of smaller into larger segments and (2) the allocation of marketing effort among a given set of segments.

The actual implementation of normative segmentation has been difficult because :

> ...in all the present approaches...the development of market segments and allocation of resources...are considered as two independent questions. In fact the two issues are closely intertwined.
>
> (Mahajan and Jain,1978)

These difficulties associated with application are exacerbated if the market is disaggregated substantially into a large number of microsegments (Winter,1984), a trend that is likely to continue as firms try to out-"niche"and out-position one another.

Cost-benefit segmentation (Winter, 1979) has shown that the optimum "level" of segmentation aggregation (or disaggregation) and resource allocation can, in fact, be solved. In cost-

benefit segmentation, the market is first disaggregated as far as the data allow. Next, alternative marketing mixes are selected for each "micro-segment." Because of a fixed cost associated with each mix, there is the tendency to try to offer one mix to multiple micro-segments in spite of the fact that revenues will be highest with many mixes. Thus, the balance between the high benefit (i.e., revenue) of many mixes and the low cost of few mixes. If two or more of the "micro-segments" receive the same mix, then, indirectly, they are aggregated. This produces a result which is compatible with theoretical work (Tollefson and Lessig, 1978) which suggests segments that respond to the same mix should be aggregated. It also recognizes that the number of mixes employed is often constrained by matters such as a budget (Mahajan and Jain, 1978). Winter (1979) has shown that the process can be solved using 0,1 integer programming (See Appendix I). However, 0,1 integer programming has never enjoyed great popularity among marketing managers. This paper will present an alternative to this formulation.

It is a fact of segmentation analysis that the analyst rarely knows the exact response of the segments. Conjoint analysis, causal modelling, and other methodologies have added to our understanding of response; nevertheless, to a great extent, guesswork is involved. While this methodology cannot change this, the procedure can help to direct our guesswork in an effective manner.

In order to effectively analyze different market segments, one needs a tool that will handle a great many microsegments as well as a considerable number of "what ifs" on

the part of the analyst. Lotus 1-2-3 software in conjunction with a microcomputer is superb in this regard. Its acceptance among managers is legendary and, thus, it offers a practical "on hands" alternative to 0,1 programming formulations.

The process of determining each mix to be offered is hopelessly complex. A change of marketing mix can be expected to change market share (and therefore sales units), price, unit cost, and maybe fixed costs. Imagine being given the following instructions:

> "There are 10 segments out there, all of whom behave differently. We need you to develop the optimal advertising, price, distribution, and product mix. Bear in mind that if you want to offer different colors, the manufacturing setup cost is $40,000. But if you can get them to buy blue colored units, we can save $ .20 per unit. Don't spend too much on advertising since only segments 3, 4, and, to a lesser extent 8, respond at all to advertising, although segment 7 will respond to fear appeals. Make sure that if you sell units at different prices to different segments, then atleast the units differ in terms of some product feature....And, by the way, Pete Jones, our Sales Manager, can brief you as to the costs of increasing distribution."

THE SEGMENTATION PROBLEM

The segmentation problem is essentially quite simple: Given different microsegments, what marketing mix should be assigned to each segment, recognizing that more mixes will be more costly than few and that some mixes are more expensive than others? Furthermore, the cost of each additional mix employed must be compensated for by offsetting revenue increases.

For segmentation purposes, numbers in the spreadsheet are the result of either inputs (that may later be subject to "what

if" analysis), or formulae representing values which depend upon other cells. The "macro" feature of 1-2-3 which permits programs to be written that process data or assist in cell transfer or movement was used extensively. Some of the macros employed in segmentation analysis will be discussed in Appendix II .

The discussion of the worksheet approach to segmentation will proceed by describing different zones of the 1-2-3 worksheet that are used in determining the overall profit associated with the different marketing combinations.

Early "Field" Testing 1-2-3 Segmentation

Eleven managers of profit and non-profit organizations were taught to use Lotus 1-2-3 segmentation in approximately 2 hours. All had prior exposure to Lotus although some were more comfortable than others with the use of 1-2-3.

Once the model was described, the managers inputted best guess estimates of the market for one of their products/services.

All the managers developed spreadsheets which they felt represented the market in which they compete. After inputting the status quo mix(es) which their firm currently employs, they then tried different mixes to develop alternative mixes to consider. The change in profit was noted. The expected profit increases varied from a low of +12.5% up to +141%. While these are projected, not actual results, all managers felt that real gains would result because of 1-2-3 segmentation.

An illustrative problem will first be described from an in-depth case study on which the data in the zones is based (the actual data have been partially disguised).

An Illustrative Application

A manufacturer of a sporting goods/recreational consumer good was interested in adding a new product to a current product line. The 1-2-3 model was used to review the marketing mix targeted for the market.

The manufacturer determined the following factors to be relevant in terms of the effect on profit:

Controllable exogeneous variables-price, promotional giveaways, weight, advertising budget, product feature X (unnamed to prevent disclosure of the product), and number of dealers

Uncontrollable exogeneous variables-- price charged by competitors

Endogeneous variables--competitive entry (and price charged) as well as professional use of brand.

The controllable variables would directly affect market share and would also effect the endogeneous variables which, in turn, affect market share. For example, the weight of the product will not only affect the user, but the lighter the unit the more appeal to the professional. If the professional segment were to adopt the brand it would further influence the weekend athelete in his choice of brands.

Many of the inputs are from company records, but many such as competitive prices had to be guessed. Of course it is easy to do a sensitivity analysis on values with subjective estimates.

The remainder of the paper will describe the major zones of

the worksheet by use of the illustrative example, above. The data shown in the illustrative problem are for one time period, the ending period. Later a procedure to consider the worksheet over multiple time periods will be discussed.

ZONES OF THE WORKSHEET

The Summary Zone: The Results Section

The Summary Zone in Exhibit 1 can be called the "results" zone since decisions in other zones will produce "results" such as market shares, unit costs, fixed costs, and the criterion variable, total profit (in the lower left corner of the Summary Zone). Note that the results in the total market column are simply the summation of results in individual micro-segments (up to 12 micro-segments are allowed).

Inputs to the Summary Zone by the manager are segment names, segment proportions, total number of consumers in the market, and the purchase rates of the different segments. Furthermore, the user can specify fixed or unit costs associated with transactions with a particular segment. For example, if one segment is geographically distant from others, there may be some particular transportation costs which must be incurred. All other values shown in the worksheet are formulae driven by inputs to other parts of the worksheet.

The total size of the market targeted by the case study sponsor was expected to include 30,000 potential consumers divided between the various segments. Of those who would not be expected to buy the competitive product lines, the following

segments were thought to exist: the weekend athlete who buys by mail, the weekender who buys from a dealer, the serious competitor who buys by mail, the serious user who buys from a dealer, and the professional. The purchase rate was expected to vary between .25 and (meaning purchases varying between once every four years) to once every year. Dealer margins were added to segment specific costs.

Because the company already had an existing product line, it was necessary to consider two atypical segments: purchasers who would normally buy company brand X, and purchasers who would normally buy company brand Y. When this is modelled, these "loyal" segments (CUST X and CUST Y in the worksheet) will have costs associated with them that reflect the contribution margin for the firm's current products ($80 and $75 for X and Y respectively). In this way, if the new product gains some of the loyal markets, it must have a margin great enough to more than overcome the margin of the existing line. If not then "cannibalization" will cost the firm profit.

The Cost Zone: Cost Assignments

Cost-benefit segmentation clearly showed that a proliferation of marketing mixes can add greatly to the cost of the marketing program. In the Cost Zone (Exhibit 2), these costs are input. The first entry is base cost which represents the fixed and unit costs associated with production of a "base" unit. Fixed overhead can be considered but was not by the case study manufacturer.

For each marketing mix component, any additive value (added to the base) associated with the mix is input. Note that some

costs, such as advertising, are primarily fixed while others, such as weight can involve a combination--unit cost which reflects procurement and manufacturing and fixed cost incorporating set up time and administrative costs, for example.

The model can consider the evolution of costs over time. A column is available for reduction in unit costs associated with experience. A value of 10% would, for example suggest that unit costs will drop 10% with each doubling of volume. In the sample problem the experience factor was expected to be 5%. In this case, experience was not a major factor, but in other studies it has resulted in a lower initial cost to both reduce competitive sales but also to drive down the experience curve more rapidly.

Another column is available to model in a one-time fixed costs, such as that associated with purchase of special equipment, etc.

Inputs to the cost zone come from the analyst. Columns not described such as cumulative units are used for calculation purposes. As far as outputs, the appropriate unit costs go into the unit cost row of the Summary Zone, for the respective assigned mix. Assigned fixed costs go into the total profit calculation, also in the Summary Zone.

The Response Zone: Segment Response

The Response Zone (Exhibit 3) indicates the segments' market share responses to different marketing mixes. The figures shown for each segment are similar to dummy variable regression coefficients. An intercept term is also included. The model of market share is:

$$EMSj = b1j\ x1j + b2j\ x2j + b3j\ x3j + \ldots$$

where:

EMSj = expected share realized in segment j

bij = response coefficients; bij represents the effect of mix level i on segment j

xij = 0,1 dummy variables; equal to 1 if marketing mix level i is directed to segment j, 0 otherwise

However, Lotus 1-2-3 is very flexible and its formulae could easily handle nonlinear models of market share. The dummy variable methodology is simple to implement and understand. Both discrete variable and nonlinear relationships can easily be modelled. If formulae were substituted for scale values, interactions could be modelled as well.

Early field testing of the worksheet indicated that many worksheet inputs were straight-forward and generally known or obtainable with little trouble. The inputs that presented the most difficulty were the response coefficients. In particular, the intercept value was difficult for the managers to understand. One method that helped enormously was to input zero for the coefficient for the present marketing mix (labelled "base" in the worksheet it might represent current price, level of advertising,etc.). If this is done, the intercept can be interpreted as the current (or expected) market share in each segment. Although some of these market shares had to be guessed, the total market share (Column 1 of the Summary Zone) was generally known and this facilitated the estimation of the segment components. Once the zero base was established, other mix coefficients were deviations around this zero value (e.g.,

the coefficient for a decreased advertising level would be negative and increased advertising would have a positive coefficient).

The response zone of the illustrative problem reflects the feeling that the professional is not a likely to be a purchaser of this product unless the weight is significantly reduced. It was felt that the market share in the professional market could positively impact the serious and weekend competitor and therefore we see "professional penetration" affecting other segments.

In the illustrative problem, a straightforward guess of response zone coefficients produced initial values for market share (with various mix adjustments) that management felt were unobtainable. Because of this one of the options available in the program was used to statistically estimate coefficients using subjective management judgments of market share.

This statistical estimation procedure utilizes an orthogonal design written into the Lotus worksheet which presents managers with different components of the marketing mix, and the user provides the expected share. (See Exhibit 4 for one of 16 different mix combinations from the sample problem). A regression was then fit to the responses and the coefficients then represent starting inputs to the Response Zone (Lotus 1-2-3 Version 2 has a regression capability). Management felt that these new coefficients represented a more valid picture of the market and only small modifications were made to the regression-derived values.

The market share of the Summary Zone is constrained between the values of 0 and 1. Other than these limits, the response values of Zone 2, in conjunction with the assignments of the Mix Zone (to be described) determine the market share in each segment.

Simulation and the Probability of Response Zone

There exist a number of circumstances where a variable that affects market share may be operational in one period but not in another. In the example problem, the entry of a new competitor would affect market share if it were in effect. Therefore, it is desireable to allow a variable to probabilistically be included or excluded from the system.

Exhibit 5 shows the "Probability of Response Zone" which tracks the status (e.g.included or excluded) or each variable. The first column represents the starting status. "1" means the variable is included and "0" means excluded. The next two columns represent the probability of inclusion given currently excluded or included respectively. The last column is the status for the period being considered.

There are two ways in which probability can be considered. If the user inputs "1" for the number of simulations desired, the variable will be considered in a expected value mode. Thus the current status for a variable will be :

Current status=previous status X probability of in given in

+ (1-previous status) X probability of in given out

This new current status is then multiplied by cost and response

coefficients and, therefore, is included in the summary zone.

A second option is to do a Monte Carlo type of simulation (accessed by indicating a number greater than 1 when the pre-programmed macro asks for the number of desired simulations). If the second column has a value of .6, for example, a 0 to 1 uniformly distributed random number (available in Lotus) will decide whether the next current status will be "in" (random number between 0 and .6) or "not in" (random number greater than

its response coefficients affect market share. If the next period status is "in", then the probability of staying in given already in will determine the next period status.

In the application discussed the probability of competitive entry was felt to be .90. Note, however, that the entries can be formulae instead of numbers. Thus the probability of competitive entry can be based on the price level (or some other variable that affects competitive entry).

The Mix Zone: Mix Assignments

The Mix Zone (Exhibit 6) represents the marketing mixes that have been assigned to the various segments (microsegments). Therefore, it represents the zone where the manager tries alternative "what if" mixes and observes the effect on profit in the results zone (continually displayed using Lotus' title feature). For example, one might want to consider a high-priced product with a special product feature to the serious segment and a lower-priced product with an inferior feature to the weekend athlete. In contrast, advertising is spent and directed at all segments. However, because of media exposure, persuasability,

etc., some segments will respond more than others to this advertising.

One column of the Mix Zone allows an override of individual assignments ("u" or "d" specification); this allows the analyst to observe the effect of profitability of a treatment that is common to all segments (i.e. undifferentiated marketing). When this is done, the individual segment treatments have a "NOT APPL" designation (meaning that individual treatments are "not applicable"). In this way, the effect of special targeted mixes which offer the promise of more revenue ("d" for differentiated) can be compared with less costly mixes which offer identical treatments to all segments ("u" for undifferentited).

All numbers in the Mix Zone are input by the user, and, together with the response numbers of the Response Zone, market share for each segment is determined, displayed, and used further in the Summary Zone. The program allows interpolation for intervally-scaled variables, and, thus, the cost and response components contributions to the summary zone may be subject to interpolation. Furthermore, the program warns the user when levels are selected which are outside the upper and lower limits for each variable.

Dynamic Modelling

As the discussion indicated, it may be desireable to consider the worksheet over multiple time periods. Because of this, the program is set up to cycle through consecutive time periods. One option is to go through time periods where pre-programmed formulae change the values. For example, the formula

30000*((1.07)^PERIOD) will increase a value of 30,000 (e.g. market size) by 7% every year (or whatever the duration of one time period). Alternatively, the user can select the option to intervene on a period by period basis and change elements of the worksheet prior to proceeding.

Throughout the cycles, the profit figures are calculated and stored. Present values are then calculated (Exhibit 7 for the case study).

Advanced Modelling Options

A number of advanced modelling features including simulation and dynamic modelling using formulae instead of constants for cell entries have already been discussed. To supplement this two other "mini-zones" are available on the worksheet (Exhibits 8 and 9). The random number zone will simply generate random numbers from a uniform or normal distribution with specified parameters. This can be helpful in introducing noise or randomness in cost, mix or other zones of the worksheet.

The lagged variable zone will track variables of interest through three lagged time periods. In the illustrative problem, note that the variable in the mix zone that represents professional penetration really a "formula" and is equal to the cell that tracks the one-period lagged market share in the professional segment (Exhibit 9). Professional penetration then, in turn, affects market shares of the weekend, serious, and loyal customer segments via the response coefficients.

This particular case indicates further why a dynamic analysis is particularly important. While it may not be

worthwhile to market to professionals in a one period time horizon, the value is clearly seen over multiple time periods, because of the professional impact on the amateur. In other applications, low price strategies could be considered that gain early experience curve effects and/or discourage competitive entry.

Case Study Results

In the case study described (Mix Zone appears in Exhibit 6), the firm was able to increase its expected three year profit by 14%, when compared to what was previously felt to be the best mix. The better mix was achieved by not increasing the number of dealers and by changing the weight of the product to 9 from the originally-planned weight of 10 (with the exception of professionals who will receive the professional model with weight of 8).

Management continues to debate the outcome of the program and other management participants will input best guesses to the program. The exercise was felt to be very helpful in indicating where additional data were required and where the solution is insensitive to different inputs. Plans to extend the analysis to other products of the company have already been made.

USING 1-2-3

There are a number of major benefits associated with using the special 1-2-3 worksheet for market segmentation. First and most important is the ability to change mix assignments (in the Mix Zone) and observe the effect of market share, sales, and

profitability in the Summary Zone. The results of the current mix employed can be easily compared to a large number of other mixes.

The method used can structure the analyst's thinking. Managers are forced to think about various segments--segments which truly respond differently to different marketing stimuli. In segmentation, if one were to use bases that are inappropriate, then each segment will respond similarly (and therefore equal to the aggregate market), and differentiation in terms of marketing mixes will yield no additional profit over and above the best aggregated mix.

Another benefit is that management is forced to incorporate costs and the cost structure of the different mixes into their thinking. This, traditionally has been a weakness of marketing managers. Finally, the procedure helps to point out unknowns and graphically demonstrate the sensitivity of profit to these unknowns.

Although the 0,1 programming solution of Appendix I is more elegant, 1-2-3 segmentation permits the modelling of real-world complexities such as non-linear cost functions, multiple time periods and the dynamic response of the market, and competitive reaction. While many analytical solutions or programming solutions are more elegant, few methods can offer the realism of a sophisticated worksheet such as that described.

LIMITATIONS AND CONCLUSIONS

Some features not explicitly discussed are described in Appendix II. These greatly enhance the usefulness of the

approach. Nevertheless, the model recommended has a number of limitations, most of which can be easily overcome with simple modification. All in all, 1-2-3 segmentation would appear to contain realistic models of the market and revenue and cost behavior resulting from the direction of marketing mixes to the segments of the market. The form is "manager friendly" since 1-2-3 has many enthusiastic followers among marketing managers. Various features of 1-2-3 including macros and graphing should assist use and presentation of the results.

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APPENDIX I

0,1 Programming Formulation of the Segmentation Problem

We can consider overall profit Z as:

$$Z = \quad Xij\ GPij - \quad wj\ FCj$$

or:

$$Z = \quad Xij\ (Ni\ Cj\ Di\ Pij) - wjFCj$$

subject to:

$$Xij - wj < 0 \quad \text{for all } i,j$$

$$Xij = 0,1$$

where:

- Xij =0,1 assignment variable. If 1 it indicates marketing mix j is assigned to segment i.
- wj = 1 if marketing mix j has been assigned to atleast one segment, 0 otherwise
- GPij =gross profit before fixed costs associated with offering marketing mix j to segment i
- Ni =number of consumers in segment i
- Cj =contribution margin which is the price associated with marketing mix j minus the cost associated with mix j
- Di =per capita demand of product class by segment i consumers
- Pij =probability of brand (defined by mix j) purchase by members of segment i
- FCj =fixed costs associated with offering mix j

APPENDIX II

Macros and Special Features of 1-2-3 Segmentation

1. Initialization Macro

After the user responds that he would like the initialization procedure, the program queries the analyst with regard to the relevant marketing mix variables and the levels described (up to eight mix variables of four levels are allowed).

2. Interpolation Feature

If the analyst specifies four levels of an intervally-scaled variable as $10MM, $20MM, $30MM, and $40MM, for example, the effect of $18MM on sales and costs will be interpolated. The program also warns the user when variable levels selected outside the permissable range are being used.

3. Movement Macros

The program employs a number of macros that facilitate movement around the diverse worksheet. " Alt-Z", for example, put a zone menu up that facilitates movements between zones. "Alt-M" displays the main menu.

4. Formula Feature

The formula feature allows the user to select a linear, exponential or s-shaped formula for inclusion in any cell. In addition to the independent variable specification, the user must indicate parameter values. The graphing feature is available to view the relationship prior to actual "imprinting" in a cell.

EXHIBIT 1

PERIOD RUN 1	0	1	2	3	4	5	6	7
3 SEG NAME:	TOTAL	WEEKEND,MAIL	WEEKEND,DEAL	SERIOUS,MAIL	SERIOUS,DEAL	PROFESSIONAL	CUST X	CUST Y
Segment Proportions	1.00	0.04	0.36	0.20	0.02	0.08	0.18	0.12
Number of Potential Cust	30,000	1,200	10,800	5,940	660	2,400	5,400	3,600
Purchase Rate	0.42	0.25	0.25	0.50	0.50	1.00	0.50	0.33
Potent.Volume	12,588	300	2,700	2,970	330	2,400	2,700	1,188
Exp.Mar.Share	0.23	0.19	0.24	0.18	0.25	0.25	0.26	0.27
Exp. Volume	2,922	56	645	526	82	600	695	318
Price	$251.80	$229.00	$229.00	$259.00	$259.00	$259.00	$259.00	$259.00
Sales $	$735,658	$12,814	$147,790	$136,164	$21,112	$155,400	$180,070	$82,308
Segment Specific Unit Cost		$0.00	$80.15	$0.00	$90.65	$0.00	$80.00	$75.00
Total Unit Cost		$54.23	$134.38	$62.23	$152.88	$112.23	$142.23	$137.23
Gross Profit	$390,886	$9,780	$61,065	$103,448	$8,650	$88,062	$81,184	$38,697
Segment Specific Fixed Cost		$0	$0	$0	$0	$0	$0	$0
Total Fixed Cost	$35,000							
Total Profit-this Period	$355,886	.....			$355,886	.....		
P.Value CumulativeProfit	$725,087	(Incl.period		3 asssuming a		20.0% cost of capital)		

EXHIBIT 2

ZONE 4 ITEMS	UNIT COST	EXPER FACTOR	ANNUAL FC FIXED COST	Type	ONE TIME FIXED COST	PERIOD TO PAY	PREVCUM UNITS
Base	$64.00	5%	$0		$0	1 *	5843.096
Units for experience to start=			4,000				
Promo Giveawa							
nothing	$0.00	0%	$0	i	$0	1 *	0
A	$0.00	0%	$5,000	i	$0	1 *	5843.096
B	$0.00	0%	$5,000	i	$0	1 *	0
A+B	$0.00	0%	$10,000	i	$0	1 *	0
Weight							
8	$50.00	0%	$0	c	$20,000	1 *	1200
9	$6.00	0%	$0	c	$20,000	1 *	0
10	$0.00	0%	$0	i	$0	1 *	0
	$0.00	0%	$0		$0	1 *	0
Prof. Penetra							
0	$0.00	0%	$0	c	$0	1 *	0
0.1	$0.00	0%	$0	c	$0	1 *	0
0.2	$0.00	0%	$0	c	$0	1 *	5843.096
0.4	$0.00	0%	$0	c	$0	1 *	1460.774
Adv$							
5000	$0.00	0%	$5,000	c	$0	1 *	0
10000	$0.00	0%	$10,000	c	$0	1 *	0
15000	$0.00	0%	$15,000	c	$0	1 *	0
20000	$0.00	0%	$20,000	c	$0	1 *	5843.096
Feature X							
no	($8.00)	0%	$0	i	$0	1 *	1402.575
yes	$0.00	0%	$0	i	$0	1 *	4440.521
	$3.00	5%	$0	i	$0	1 *	0
	$0.00	0%	$0		$0	1 *	0
Current Comp Pr							
220	$0.00	0%	$0	c	$0	1 *	5843.096
260	$0.00	0%	$0	c	$0	1 *	5697.018
290	$0.00	0%	$0	c	$0	1 *	0
	$0.00	0%	$0		$0	1 *	0
New Comp Pric							
220	$0.00	0%	$0	c	$0	1 *	5697.015
260	$0.00	0%	$0	c	$0	1 *	5554.590
290	$0.00	0%	$0	c	$0	1 *	0
	$0.00	0%	$0		$0	1 *	0
Number Dealer							
200	$0.00	0%	$0	c	$0	1 *	0
300	$0.00	0%	$10,000	c	$0	1 *	5843.096
400	$0.00	0%	$20,000	c	$0	1 *	0
500	$0.00	0%	$40,000	c	$0	1	0

ZONE 2 ALT.MKT MIXES		SGMNTWEEKEND	MAILWEEKEND	DEALSERIOUS	MAIL SERIOUS	DEALPROFESSIONAL	XFM1 CUST	M2 CUST
cur Status INTERCEPT.		0.08	0.12250	0.07	0.12	0.02	0.19	0.18
1 Price								
229		0.04000	0.03000	0.03000	0.01500	0	0.01500	0.03000
239		0.03000	0.02000	0.02000	0.01000	0.00000	0.01000	0.02000
259	base	0	0	0	0	0.00000	0	0
269		-0.02000	-0.01000	-0.10000	-0.05000	0.00000	-0.05000	-0.01000
1 Promo Giveaway								
nothing		0	-0.005	0	-0.005	0	-0.005	-0.005
A	base	0	0	0	0	0	0	0
B		0	0.01	0	0.01	0	0.01	0.01
A+B		0	0.02	0	0.02	0	0.02	0.02
1 Weight								
8		0.06750	0.06750	0.10000	0.10000	0.23	0.10000	0.06750
9		0.03000	0.03000	0.04000	0.04000	0.01	0.04000	0.03000
10		0	0	0	0	0	0	0
		0	0	0	0	0	0	0
1 Prof. Penetration								
0	base	0	0	0	0	0	0	0
0.1		0.02000	0.02000	0.02000	0.02000	0	0.02000	0.02000
0.2		0.03000	0.03000	0.03000	0.03000	0	0.03000	0.03000
0.4		0.04000	0.04000	0.04000	0.04000	0	0.04000	0.04000
1 Adv$								
5000		-0.07500	-0.07500	-0.07500	-0.07500	0	-0.07500	-0.07500
10000		-0.03500	-0.03500	-0.03500	-0.03500	0	-0.03500	-0.03500
15000	base	0	0	0	0	0	0	0
20000		0.03500	0.03500	0.03500	0.03500	0	0.03500	0.03500
1 Feature X								
no	base	0	0	0	0	-100	-0.08	0
yes		0.02	0.02	0.04	0.04	0	0	0.02
		0	0	0	0	0	0	0
		0	0	0	0	0	0	0
1 Current Comp Price								
220		-0.02000	-0.02000	-0.01000	-0.01000	0	0.00000	0.00000
260	base	0	0	0	0	0	0	0
290		0.02000	0.02000	0.01000	0.01000	0	0.00000	0.00000
		0	0	0	0	0	0	0
0.9475 New Comp Price								
220		-0.02	-0.02	-0.01	-0.01	0	0	0
260	base	0	0	0	0	0	0	0
290		0.01	0.01	0.05	0.05	0	0	0
		0	0	0	0	0	0	0
1 Number Dealers								
200	base	0	0	0	0	0	0	0
300		0	0.02	0	0.02	0	0	0
400		0	0.03	0	0.03	0	0	0
500		0	0.035	0	0.035	0	0	0

EXHIBIT 4

GIVEN...

Price	=	259
Promo Giveaway	=	A
Weight	=	8
Prof. Penetration	=	0
Adv$	=	10000

Enter market share : 0.00%

(as a percentage)

12 Questions remaining

EXHIBIT 5

Start Status	Prob in given out	Prob in given in	prev status	ZONE 2 cur Status	ALT.MKT MIXES INTERCEPT.	
1	1	1	1	1	Price	
						229
						239
						259
						269
1	1	1	1	1	Promo	Giveawa
						nothing
						A
						B
						A+B
1	1	1	1	1	Weight	
						8
						9
						10
1	1	1	1	1	Prof.	Penetra
						0
						0.1
						0.2
						0.4
1	1	1	1	1	Adv$	
						5000
						10000
						15000
						20000
1	1	1	1	1	Feature X	
						no
						yes
1	1	1	1	1	Current	Comp Pr
						220
						260
						290
1	0.9	0.95	0.95	0.9475	New Comp	Pric
						220
						260
						290
1	1	1	1	1	Number	Dealer
						200
						300
						400
						500

EXHIBIT 6

	MIXES FOR:.....SEGMENTS:WEEKEND,MAILWEEKEND,DEALSERIOUS,MAIL				SERIOUS,DEALPROFESSIONAL		CUST Y	CUST Y
	PERIOD.RUN d=differentiated	ALL	1	2	3	4	5	6	7
	3.1 u=undiff'd								
	Minimum= 229 d								
Price		249	229	229	259	259	259	259	259
		(NOT APPL)							
	Maximum= 269								
	1= nothing u								
Promo Giveaway	2= A	2	0	0	0	0	0	0	0
	3= B		(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)
	4= A+B								
	Minimum= 8 d								
Weight		8	10	10	10	10	8	10	10
		(NOT APPL)							
	Maximum= 10								
	Minimum= 0 u								
Prof. Penetrati		0.25	1	1	2	0	0	0	0
			(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)
	Maximum= 0.4								
	Minimum= 5000 u								
Adv$		20000	0	0	0	0	0	0	0
			(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)
	Maximum= 20000								
	1= no d								
Feature X	2= yes	2	1	1	2	2	2	2	2
	3=	(NOT APPL)							
	4= 0								
	Minimum= 220 u								
Current Comp Pr		259	0	0	0	0	0	0	0
			(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)
	Maximum= 290								
	Minimum= 220 u								
New Comp Price		259	0	0	0	0	0	0	0
			(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)
	Maximum= 290								
	Minimum= 200 u								
Number Dealers		300	0	0	0	0	0	0	0
			(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)	(NOT APPL)
	Maximum= 500								

EXHIBIT 7

SIMULATION RUN TIME PERIOD	1	2	3
		CASH FLOWS	
1	$330,699	0	0
2	$350,714	0	0
3	$355,886	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9	0	0	0
10	0	0	0
NET PRES VALUE	$725,087	$0	$0

EXHIBIT 8

RANDOM NUMBERS				
if NORMAL distrib."n"		SIGMA=	MEAN=	
if UNIFORMdistrib."u"		LOW=	HIGH=	RN
#1	u	0.1	1.1	0.939
#2	u	0.2	1.2	0.498
#3	u	0	1	0.414
#4	n	50	100	143.798
#5	n	1	5	5.869
#6	u			0.000
#7	u			0.000

EXHIBIT 9

Var	t (formula)	LAGS SECTION t-1	t-2	t-3
prof. penetr	0.25	0.25	0.15	0.00